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ABSTRACT

A technique to teach cognitive skills to directly facilitate abstract and rational thinking is described. Based on George Kelly's theory of personal constructs, his Role Construct Repertory Test has students construe similarities and differences among important course concepts rather than provide individual definitions or examples of those concepts. The test-taker is asked to construe three concepts, to determine how two are similar and different from the third. The similarity and contrast are then labeled as poles of the construct. An effective way to utilize this technique is to have students work in groups to construe several sets of three (or more) concepts. Through discussion, students first need to become familiar with involved concepts by actively seeking definitions and examples. Students will then share ideas about important features to be abstracted and constructs to be applied. Thus, students will be actively learning and using material. Rather than teach content and hope that students will somehow pick up abstract and relational thinking skills in an indirect fashion, this exercise facilitates the direct teaching of such skills. After the specific course content has been forgotten or has become obsolete, students will be able to continue using the skills they have learned. (Author/PN)

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A Method for Facilitating Abstract Thinking in the Classroom

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Presented at the meeting of the Northern Rocky Mountain Educational Research Association, Jackson, WY, October 1984. Requests for reprints should be sent to Mitchell M. Handelsman, Department of Psychology, Box 173, University of Colorado at Denver, Denver, CO 80202.

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Abstract

A teaching technique which directly facilitates abstract and relational thinking is described. Based on Kelly's theory of personal constructs, the exercise has students construe similarities and differences among important course concepts, rather than merely provide individual definitions or examples of those concepts.

A Method for Facilitating Abstract Thinking in the Classroom

Applying abstract concepts appropriately and relating concepts to each other are two skills college students need to learn. Unfortunately, abstract and relational thinking is often taught only by "osmosis"; we focus on memorization of concepts, while devoting little or no time to their manipulation. Students are not encouraged to grapple with concepts, to actively engage in using the material they've learned. When the relationship between concepts is presented, it is typically done by lecture; students are not exposed to the process involved in generating such relationships.

A problem instructors often encounter is the confusion of definition and examples. One common teaching method is to start with a definition of a concept and move on to an example (a more concrete level of abstraction). After defining "superego," for instance, the instructor may say something such as, "An example of the work of the superego is when you are contemplating having premarital sex. The superego strives to stop this id impulse, and you will feel some guilt." The definition and the concrete example are then confused by students. When asked to define the concept on a test, they may write, "The superego is when you feel guilty about having sex."

When students take exams, they often feel disgruntled and betrayed by the discrepancy between what is taught and what is tested. Class periods have been spent primarily on definition and examples, but students are tested on knowledge plus a skill they

are not familar with. Too often we assume students will develop relational thinking skills by "osmosis." The exercise described here is designed to teach such cognitive skills more directly.

George Kelly held that people's primary motivation is to accurately anticipate events. Just as scientists do, people attempt to abstract features that certain elements (i.e., people, objects, events) share, and which distinguish those elements from others. These features are then organized into cognitive structures called constructs, which serve to make the world more predictable. Constructs are dichotomous templets people use to interpret the world. Experience can be construed using either pole of the construct. For example, I can notice that Jennifer and Bill both have good senses of humor, while Mary is a very serious woman. The construct "sense of humor vs. serious" may allow me to predict whom I would get along well with. What I have done is to abstract features of these people which allow me to see similarities and contrasts among them. Once I have this construct, based on my experience of these three people, I can use it to construe new people I meet.

In order to assess the idiosyncratic constructs people use in order to predict and control their world, Kelly devised the Role Construct Repertory Test. The person taking the test is asked to construe three people in his or her life, to determine how two of the people are similar and different from the third. The similarity and contrast are then labeled as poles of the personal construct. For example, a person's mother and brother may be well-educated,

while his or her father is not. The construct "educated vs. not well-educated" may be an important tool in that person's hypothesizing about the people in his or her life. Once this construct has been made explicit, the person can construe other significant people along that dimension. Other personal constructs are tapped by having the person construe other combinations of people.

The adaptation of this approach for classroom use involves substituting important course concepts for people. For example, the concepts id, ego, and superego are put on the board. Students are then asked to construe them, to state how two of the concepts are similar and different from the third along some important dimension. One such construct may be "innate vs. acquired." The id would be construed as innate, while the superego and ego would be construed as forming after birth. Or, the id and superego could be construed as "not in touch with reality," in constrast to the ego, which would be construed under the opposite pole, "in contact with reality." Once these constructs are developed, they can be used to construe other concepts which are studied later. For example, the construct "active vs. passive" may be used to relate the concept of "ego" as postulated by Freud, Hartmann, and White. Later, Jung's and Adler's conceptions of ego may be construed along the same dimension.

One effective way to utilize this technique is to have students work in groups to construe several sets of three (or more) concepts. In the course of discussion, students will first need to become familiar with the concepts involved--if they haven't already.

They will actively seek definitions and examples of concepts from books, notes, and each other. They will then share ideas about important features to be abstracted and constructs to be applied. In short, they will be actively learning and using course material.

Although development of abstract thinking is the primary goal of the exercise, it could be that students will learn the content more effectively. Students may be more motivated to learn the concepts in this exercise because they are doing so as a means to an end (i.e., accurate construction), rather than as a sterile and arbitrary end in itself.

Rather than move from the concepts to the concrete level of examples, this exercise compels students to move up a level of abstraction, to features which refer to the relationships among concepts. For example, rather than seeing the ego and superego as independent concepts, the student can now see them as similar in their lack of independent energy (in contrast to the id), and as differing in their contact with reality. In introducing this exercise to students, it is useful to talk about different levels of abstraction, and attack directly the differences among examples, definitions, and higher-order abstractions.

Since Kelly's constructs imply contrast as well as similarity, students will have a new way to handle "compare and contrast" questions. They can now do more than simply define each concept in turn. While some students are able to answer such questions anyway,

the present technique allows all students to learn--and practice--the skill involved.

The discrepancy between what is taught and what is tested can be reduced by having some test questions worded the same as the wording of the exercise itself. Questions which tap students' ability to construe sets of concepts may also allow them to be more creative. The specific constructs used are less important than the skill of appropriately applying a construct to a group of concepts. Students may generate and correctly apply constructs that the instructor had not thought of! Consequently, students may not feel that they have to read the instructor's mind in order to demonstrate the skill they've learned.

At the extreme of allowing this skill to be content-free, the author has asked the following question on tests: "Choose three concepts we've studied, and tell me how two of them are similar and different from the third along some important dimension. Be creative." This allows students to demonstrate the skill they've learned at the same time they demonstrate knowledge of course content. An added advantage is that it reduces the salience of the typical argument that students didn't excel on the test because the professor asked the wrong questions!

Rather than teach content and hope that students will somehow pick up abstract and relational thinking skills in an indirect fashion, this exercise facilitates the direct teaching of such skills. After the specific course content has been forgotten or become obsolete, students will be able to continue using the skills they've learned.